

## PATENT COOPERATION TREATY

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>02045PC/JH/AW</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/SE2003/000676</b>	International filing date (day/month/year) <b>06.05.2003</b>	Priority date (day/month/year) <b>07.05.2002</b>
International Patent Classification (IPC) or national classification and IPC <b>A01J 5/007</b>		
Applicant <b>DeLaval Holding AB et al</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
- a. ☒ (sent to the applicant and to the International Bureau) a total of 4 sheets, as follows:
- ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
- ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
- b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- |                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input type="checkbox"/>            | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

Date of submission of the demand <b>03.12.2003</b>	Date of completion of this report <b>05.08.2004</b>
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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/000676

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))  
☐ publication of the international application (under Rule 12.4)  
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

☐ the international application as originally filed/furnished

☒ the description:

pages 1 - 10 as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the claims:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19

pages\* 1 - 4 received by this Authority on 01.06.2004

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the drawings:

pages 1 - 3 as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/000676

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	<u>1-13</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-13</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-13</u>	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

The present invention relates to a method for separating a first quantity of milk drawn from a milking animal in an automatic milking machine from a second quantity of milk obtained from a milking animal, and it also relates to an automatic milking machine performing this method. By automatically collecting and analysing a small amount of the first quantity of milk using an on-line cell counter, a valve can be operated so as to control whether this first quantity is to be saved in a first container, a second container or be directed to a drain.

Amended claims have been issued.

The invention according to the amended claims is characterised in that an indicator of mastitis is measured and that the small amount of milk is analysed and the operation of the valve is performed only if the first indicator of mastitis is above a second threshold.

The cited WO 0027183 reveals the use of an on-line somatic cell counter, which can be used to control the handling of the milk, see page 21, lines 23-26. This handling may include directing the milk to one or several temporary milk storage means, see page 22, lines 14-24.

This document, however, does not reveal using a first indicator of mastitis.

Thus, the invention according to the amended claims is novel. This invention is not considered to be obvious to a person skilled in the art.

The invention is industrially applicable.

**CLAIMS**

1. A method for separating a first quantity of milk drawn from a milking animal in an automatic milking machine from a second quantity of milk drawn from a milking animal in said milking machine comprising the steps of:
- milking an animal using said automatic milking machine,
  - measuring a first indicator of mastitis,
  - automatically collecting a small representative amount of said first quantity of milk during said milking,
  - analysing at least a part of said small representative amount of milk using an on-line cell counter for counting the number of cells in said first quantity of milk,
  - operating a valve depending on the counted number of cells so that if the counted number of cells are below a first threshold said first quantity of milk is collected in a first container and if said counted number of cells are equal to or above said first threshold said first quantity of milk are directed to a drain or a second container, and wherein
  - said analysing of at least a part of said representative amount of milk, and said operation of said valve, are performed only if said first indicator of mastitis is above a second threshold.
2. The method according to claim 1, wherein the step of operating a valve further comprises the step of
- collecting said first quantity of milk in a third container if the counted number of cells are above a third threshold but below said first threshold and
  - collect said first quantity of milk in said first container if said counted number of cells are below said third threshold, thereby collecting milk of a first superior quality in said first container, milk of a second quality in said third container and milk of a

third quality is directed to said drain or collected in said second container.

3. The method according to claim 1 or 2, wherein said first indicator of mastitis is one indicator, or a selection of multiple indicators, selected from a group of indicators comprising: the conductivity of said first quantity of milk, the NAgase value of said first quantity of milk, the Urea value of said first quantity of milk, the temperature of said first quantity of milk, the milk flow from said milking animal or the milk quantity from a teat of said milking animal.
4. The method according to any of the claims above, wherein said small representative amount of milk is collected from a milk measuring device.
5. The method according to any of the claims above, wherein said first quantity of milk drawn from one milking animal is collected in an end unit for the duration of performing the somatic cell count.
6. The method according to any of the claims above, wherein said first quantity of milk is collected from a first teat of a milking animal and said second quantity of milk is collected from a second teat of said milking animal.
7. The method according to any of the claims above, wherein said first quantity of milk is collected from a first milking animal and said second quantity of milk is collected from a second milking animal.
8. An automatic milking machine comprising means for separating a first quantity of milk drawn from a milking animal in said automatic milking machine from a second quantity of milk drawn from a milking animal in said milking machine characterised in,



- a collecting device for collecting a small representative amount of said first quantity of milk during said milking,
- a measurement device for measuring a first indicator of mastitis,
- an on-line cell counter for analysing at least a part of said small representative amount of milk for counting the number of cells in said first quantity of milk,
- at least a first valve operable to direct said first quantity of milk depending on the counted number of cells, so that if the counted number of cells are below a first threshold said first quantity of milk is collected in a first container and if said counted number of cells are equal to or above said threshold said first quantity of milk are directed to a drain or a second container, and
- wherein said on-line cell counter is arranged to analyse said first quantity of milk only if said first indicator of mastitis is above a second threshold.

9. The automatic milking machine according to claim 8, wherein said valve is further operable to direct said first quantity of milk so as to:
- collect said first quantity of milk in a third container if the counted number of cells are above a third threshold but below said first threshold and
  - collect said first quantity of milk in said first container if said counted number of cells are below said third threshold, thereby collecting milk of a first superior quality in said first container, milk of a second quality in said third container and milk of a third quality is directed to said drain or collected in said second container.

10. The automatic milking machine according to claim 8 or  
9, wherein said measurement device for measuring a first  
indicator of mastitis is arranged to measure one  
indicator, or a selection of multiple indicators,  
5 selected from a group of indicators comprising: the  
conductivity of said first quantity of milk, the NAgase  
value of said first quantity of milk, the Urea value of  
said first quantity of milk, the temperature of said  
first quantity of milk, the milk flow from said milking  
10 animal or the milk quantity from a teat of said milking  
animal.

11. The automatic milking machine according to claim 8 -  
10, wherein said small representative amount of milk is  
collected from a milk measuring device.

15 12. The automatic milking machine according to claim 8 -  
11, wherein said first quantity of milk is collected from  
a first teat of a milking animal and said second quantity  
of milk is collected from a second teat of said milking  
animal.

20 13. The automatic milking machine according to claim 8 -  
12, wherein said first quantity of milk is collected from  
a first milking animal and said second quantity of milk  
is collected from a second milking animal.